DENON

Universal Audio/Video Player

DVD-A1UD

AV Surround Pre-Amplifier

AVP-A1HDA

Power Amplifier

POA-A1HD

AV Surround Amplifier

AVC-A1HDA

Universal Audio/Video Player
DVD-A1UD

AV Surround Pre-Amplifier
AVP-A1HDA

Power Amplifier
POA-A1HD

Thirteen years have passed since 1996 when Denon developed the AVP-A1 and POA-T3/POA-T2 separate amplifiers, the first to support Dolby Digital + THX5.1. Denon has continued to develop home entertainment components based on the total concept of “reproducing content with impeccable fidelity to the producer’s original intent.”

With the advent of high-definition content, Denon followed up its development of the A/V surround pre-amplifier and 10-channel power amplifier in 2008 by developing a high-end Blu-ray disc player capable of faithfully reproducing high-definition video and sound. Denon now offers a total system that embodies its development concept from the reading of content to its output.

Besides Blu-ray discs, the DVD-A1UD also plays every other type of disc that users might have in their library, including DVD, CD, Super Audio CD, and DVD-Audio. The DVD-A1UD delivers optimum performance for all these media thanks to the various acclaimed technologies that Denon has developed over the years and incorporated in this player.

The AVP-A1HDA and POA-A1HD separate amplifiers not only bring out the full quality of HD audio with digital and analog circuitry and 10 channels but also provide power amp assignment functions, music file streaming in networked environments, and improved ease of operation with a newly-developed GUI (graphical user interface), allowing users to build a more versatile, satisfying home theatre environment.

Denon technology will undoubtedly bring your home entertainment to the highest level possible.

DENON
DENON LINK
Advanced AL32
ON
CLOCK CONTROL
HDMI
32 1 0h00m07s
MULTI
DTS-HD MSTR
UNIVERSAL AUDIO / VIDEO PLAYER DVD-A1UD

DVD-A1UD

Denon is Proud to Announce the Completion of its Flagship Home Entertainment System with the World's First Blu-ray Universal Player

State-of-the-art Denon Solutions for Maximizing Content Quality

The world's first universal player with Blu-ray that also plays Super Audio CD and DVD-Audio(*1)

The DVD-A1UD lets users enjoy not only Blu-ray discs but also Super Audio CD, DVD-Audio, DVD-Video, and CD discs in the impeccable picture and sound quality that is expected from a Denon player. The DVD-A1UD is also equipped with DTS Neo:6, Dolby Pro Logic IIx and other decoders that reproduce surround sound with the best possible quality for the disc's content.

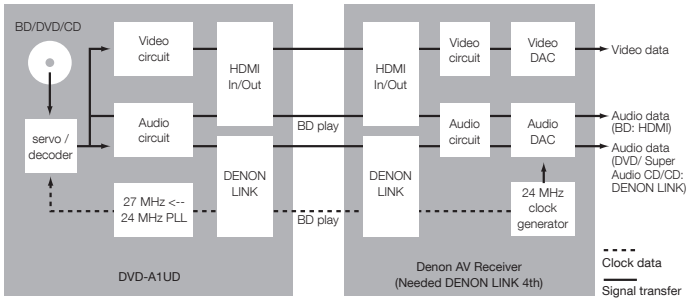
Use of DENON LINK to achieve the world's first jitter-free transmission of digital audio via HDMI(*1)

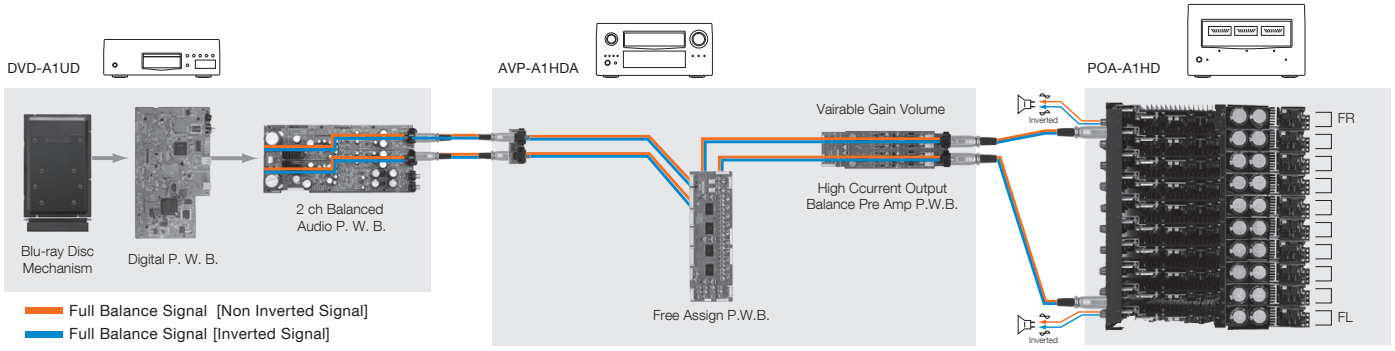
DENON LINK is proprietary high-quality digital audio transmission technology that utilizes a real-time balanced transmission system to protect the signal from external noise. DENON LINK 3rd achieved DSD transmission of Super Audio CD signals, earning high praise for the superior quality of digital signal transmission. With the more advanced DENON LINK 4th used in an HDMI connection, for HD audio read from Blu-ray disc as well, the master clock that operates the D/A converter of the A/V surround amplifier is transmitted to the player, enabling the circuitry to be operated while sharing the same clock in order to achieve digital audio transmission with negligible jitter. Sound localization becomes more precise, and a greater sense of space is produced in the sound images. When combined with a Denon A/V surround amplifier that supports DENON LINK 4th (*2), users will be able to enjoy the level of sonic quality that is expected from HD audio.

The world's first fully balanced transmission of 2-channel analog sound in a universal player with Blu-ray(*1)

Fully balanced transmission circuitry for the entire signal path to the output port has been adopted for the DVD-A1UD's dedicated 2-channel analog circuit. When combined with the AVP-A1HDA and POA-A1HD, fully balanced transmission is possible from the D/A converter of the player to amplification of the power amplifier. The balanced circuit is resistant to noise, as the plus and minus sides of the music signal are transmitted separately. Noise theoretically flowing to the ground can be ignored. If external noise occurs and disturbs the mutual waveform, the disturbance is canceled out at the end of the transmission when the plus and minus sides are combined, enabling the original music signal to be output free of noise. Superior-quality sound expected of a flagship system is produced.

DENON LINK 4th





Direct Mechanical Ground Construction, embodying concepts for thorough vibration resistance

The power transformer, itself a source of vibration, has been placed near the ground and immediately above the insulators to allow direct release to the ground and thoroughly prevent the propagation of unwanted vibration or noise.

- Hybrid construction (using heterogenous materials) with dual-layer top cover and triple-layer bottom cover suppresses vibration and resonance.
- B.M.C. side panels in high-specific-gravity and high-density hybrid construction suppress vibration and resonance.
- Cast-iron insulators absorb vibration and release it to the ground.

Denon's original Advanced S.V.H. Mechanism, newly developed for low specific gravity, vibration resistance, quiet operation, and high precision

Denon disc drive mechanisms in the DVD-A1XV, DVD-3800BD and other digital disc players have received high acclaim. For the DVD-A1UD flagship, Denon developed the Advanced S.V.H. Mechanism to achieve improved vibration resistance and quieter operation. The quiet disc loading mechanism ensures the stability demanded by this top-of-the-line model. Furthermore, by positioning the disc mechanism at a low location, it has become possible to achieve a low centre of gravity for the disc mechanism and a construction highly resistant to internal vibration caused by disc rotation and external vibration.

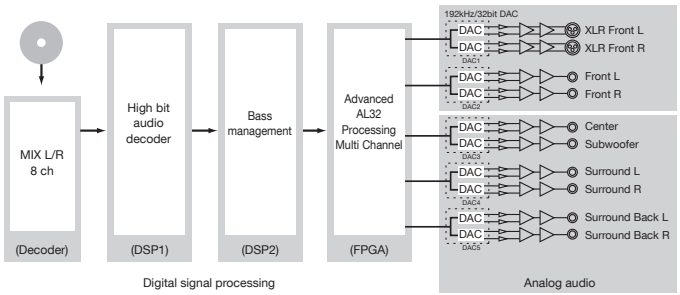
- Heavy-duty dual-layer steel top cover
- Heavy-duty clamper cover
- Zinc diecast mechanism case
- Steel shaft with specially fabricated surface
- Newly-developed floating dampers
- Thin aluminium diecast tray

7-block Structure, to thoroughly prevent mutual interference caused by electrical and magnetic factors

The 7 blocks made up of the power unit for analog circuits, the power unit for digital circuits, the server section, the digital signal processing section, the video section, the 2-channel audio section, and the multi-channel audio section have been separated to prevent mutual interference from electrical and magnetic factors. This superb separate structure ensures high picture and sound quality.

Dynamic Discrete Surround Circuit-HD, achieving high-quality sound

The D.D.S.C. is a Denon proprietary circuit configuration that features a discrete arrangement of signal processing circuits for each block, required for audio playback, to realize Denon's ideal for audio components of faithfully reproducing the content producer's original intentions. The best possible high-grade dedicated circuitry has been used for each block to ensure optimum performance. With the advent of Blu-ray, the volume of information is dramatically greater than that of DVD, delivering improvements in quality for both video images and sound. The DDSC-HD is configured of a high-bit audio decoder section, a bus management section, the Advanced AL32 Processing Multi Channel section, and an analog audio section with a 192-kHz, 32-bit D/A converter to reproduce high-quality sound and bring out the superior quality of Blu-ray sound to the maximum extent.



Dynamic Discrete Surround Circuit - HD for DVD-A1UD

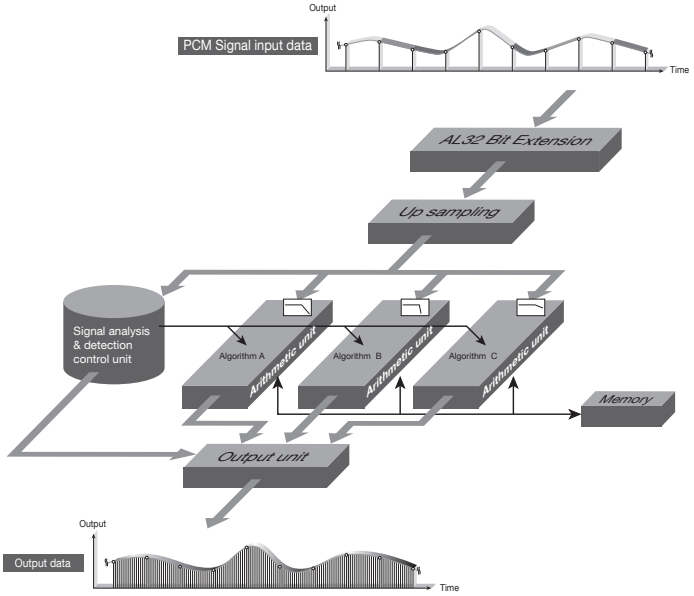
Advanced AL32 Processing Multi Channel, to further improve proprietary technology that optimises HD audio performance, used for the first time in the DVD-A1UD

In 1993, Denon unveiled ALPHA Processing, a technology that expanded 16-bit digital signals recorded on CD to 20 bits to produce a waveform that was close to that of the original sound. This marked the beginning of ALPHA Processing's history of original waveform reproduction technology.

ALPHA Processing evolved further with the advent of various new digital disc media such as DVD and Super Audio CD. This evolution progressed from AL24 Processing and AL24 PLUS Processing to Advanced AL24 Processing that achieved sampling frequency expansion, where data is interpolated along the time axis in addition to bit expansion.

Now with the appearance of Blu-ray, Denon has developed Advanced AL32 Processing that further expands the number of bits from 24 to 32 to maximize the exceptional audio performance of Blu-ray. With distortion-free sonic details, accurate sound localization, and rich low range, Advanced AL32 Processing is able to reproduce the original sound with greater fidelity.

In the DVD-A1UD, this newly-developed Advanced AL32 Processing is employed for the 2-channel balanced circuit and for 8 channels, resulting in Advanced AL32 Processing Multi Channel, to bring out the true value of this reference-class Blu-ray player.



192-kHz, 32-bit D/A Converter

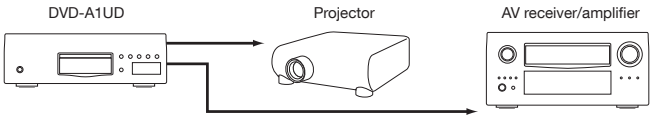
Along with the bit expansion of Advanced AL32 Processing Multi Channel, one 192-kHz, 32-bit D/A converter has been dedicated to each channel in the 2-channel balanced circuit, and four more of these converters are employed for 8-channel playback. Since each has been installed in its own independent audio circuit, audio performance has been improved in such areas as S/N ratio, dynamic range, and channel separation.

Multi-channel support from Denon's proprietary Compressed Audio Restorer function

To reduce data volume, audio compression formats remove signals that are hard for the human ear to hear. Compressed Audio Restorer regenerates the signals that were removed during compression and restores the sound close to its condition prior to compression. This function also corrects the sense of mass in the low range to produce a richer sound during playback. Compressed Audio Restorer now supports multi-channel playback for the first time, delivering an eminently satisfying sound from such audio compression formats as Dolby Digital, DTS, MP3, and WMA.

AV Pure Direct (two HDMI output ports)

The DVD-A1UD is equipped with two HDMI output ports, making it possible to send only the video signal to a projector and only the audio signal (2-channel or multi-channel) to an A/V surround amplifier. Greater picture and sound quality is achieved, as mutual interference is physically eliminated.



DVD-A1UD setting	HDMI 1 output (Video)	HDMI 2 output (Audio)
AV Pure Direct	Video	Multi ch audio (w/o Video)
Auto (Dual)	Video + Multi ch audio	Video + Multi ch audio
HDMI 1	Video + Multi ch audio	All Off
HDMI 2	All Off	Video + Multi ch audio

Dolby Pro Logic IIx and DTS Neo:6 decoding, in addition to Dolby TrueHD and DTS-HD Master Audio

The DVD-A1UD includes Dolby Pro Logic IIx and DTS Neo:6 decoding. It also supports LPCM 192-kHz multi-channel (6-channel) output, one of the audio formats of Blu-ray discs (*3). These features allows users to enjoy the ultimate in multi-channel sound quality.

Denon's video circuitry for high picture quality, to produce a richer video image from DVD [REALTA]

The DVD-A1UD accurately detects moving images at high speed and at the pixel level of detail for both film and video material, and performs precision calculations when scaling SD (480i) resolution images of DVD to HD (1080p) resolution or IP-converting images from interlaced to progressive video.

Digital Noise Reduction, effective for both HD and SD content

The DVD-A1UD has a digital noise reduction (DNR) system that uses digital processing to remove noise from video signals. This system is effective not only for standard (SD) video from DVD but also for high-resolution (HD) video from Blu-ray.

- Block noise in a mosaic pattern can be seen in a portion of the image.
- Mosquito noise makes curvatures appear fuzzy.
- Random noise makes the image appear coarse.

1080/24p output, for maximum enhancement of film texture

The DVD-A1UD is equipped with 1080/24p HDMI output functions to faithfully reproduce the realistic video images recorded on Blu-ray discs. When connected to a display supporting 1080/24p, users can enjoy Blu-ray video performance to its maximum effect with the texture of motion picture film. It is also possible to enjoy DVD at 1080/24p quality, giving the same motion picture texture to video images from DVD.

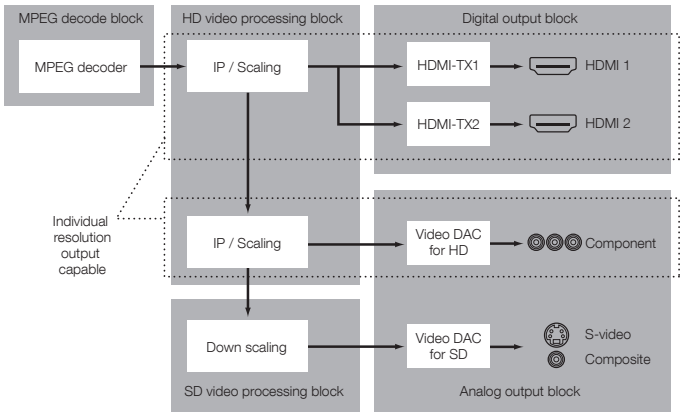
Denon Pixel Image Correction (D.P.I.C.), for more natural curvature correction

The DVD-A1UD's D.P.I.C. feature is an original Denon video enhancement technology for correcting high-definition images. This technology uses 10-bit processing to further improve detection and precision in the curvature correction of images. A new algorithm is used to sample and analyse a total of 9 pixels in the image data during enhancement that considers the effects of peripheral pixels around the target pixel. This enables very detailed detection and processing of the image at the pixel level in the vertical, horizontal, and diagonal direction. Image correction is possible not only for standard images from DVD but also high-definition images from Blu-ray discs.

Dual HD video output

Dedicated scalers are provided separately for analog and digital images. Images can be output in the resolution of HD quality through both the HDMI output and component output ports.

Dual HD video processing



Vertical Stretch (supporting the CinemaScope aspect ratio)(*4)

When video is played in the normal CinemaScope aspect ratio, a black band appears above and below the picture. Vertical Stretch vertically extends the picture so that it appears on the entire screen, allowing users to enjoy full-screen video.

Source Direct, to output disc content in its original resolution

Source Direct allows video content to be output to the HDMI or component port in its original recorded resolution.

HDMI (ver. 1.3a, supporting Deep Color, High Bit Rate Audio output), for transmission of high-definition video and audio signals

Ease-of-Use

Easy-to-read and easy-to-operate G.U.I.

The same G.U.I. that has earned high acclaim in Denon's A/V surround amplifier is also used in the DVD-A1UD. This G.U.I. offers operating uniformity with the A/V surround amplifier, improving ease of use for the user.

Support "BONUSVIEW" functions

The DVD-A1UD supports "BONUSVIEW", the interactive function that can display bonus video material on a subscreen. Artists' comments and other video material can also be displayed on the subscreen while a BD-ROM is playing.

"BD-Live" ready(*5)

With the DVD-A1UD it is possible to download from the Internet such content as captions or bonus videos that are not recorded on BD-ROM. It is also possible to participate in games and other programs linked to bonus movie content recorded on BD-ROM

Support for HDMI Control (Consumer Electronics Control)

When a TV or player supporting HDMI Control is connected to the DVD-A1UD via a HDMI cable, it is possible to use the TV's remote control unit to perform such operations as power on/off, function switching, and volume adjustment. (Note: Operation may not work with some connected devices or settings.)

Backlight for all remote control unit buttons(*6)

All buttons on the remote control unit can be backlit for easy operation in the dark.

AMX, Crestron third party IP control support with RS-232C port

IR Remote in/out ports

Ports

Video	HDMI output	2
	Component output	1
	Composite output	1
	S-video output	1
Audio	DENON LINK	1
	Optical digital output	1
	Coaxial digital output	1
	Balanced analog output(2-ch, L/R)	1 (XLR)
	7.1-ch (FL/FR/C/SL/SR/SBR/SBL/SW) output	1
Control	Ethernet	1
	SD Slot	1
	RS-232C	1
	Remote control (IN/OUT)	1/1

Specifications

Playable discs	BD-ROM (BD-Video, BDMV), DVD-Audio, DVD-Video DVD-R, DVD-RW, Super Audio CD, CD-R, CD-RW
Playable discs for PC file	CD-R, CD-RW, DVD-R, DVD-RW(*7)
Playable file	WMA/MP3/JPEG/DivX 6/AAC(m4a)/LPCM(wav) (*7)
HDMI output video resolution	576/50i, 576/50p, 720/50p, 1080/50i, 1080/50p, 1080/24p
Video	
Signal system	PAL
Audio	
S/N	125 dB
Total harmonic distortion	0.0008%
Dynamic range	110 dB
General	
Power supply	AC 230 V, 50 Hz
Power consumption	88 W, (Standby : 0.3 W)
Dimensions W x H x D	434 x 151 x 410 mm (incl. protrusions)
Weight	18.9 kg

*1) For a Blu-ray disc player [as of December 2008] (D&M Holdings survey)
*2) Denon is planning upgrades to DENON LINK 4th for the AVP-A1HDA and AVC-A1HDA A/V surround amplifier that have already been released. Denon is also planning to include DENON LINK 4th in high-end Denon A/V surround amplifiers/receivers slated for future release.
*3) Requires supporting disc.
*4) Requires projector and anamorphic lens that support the aspect ratio.
*5) The "BD-Live" ready enables to support "BD-Live" via firmware update in the future. Supporting discs are required when using "BD-Live" or "BONUSVIEW".
*6) Excludes backlight button.
*7) Some poorly-written discs may not be playable. Playback may not be possible even when a disc has been correctly finalized.

*Design and specifications are subject to change without notice.
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*"BONUSVIEW" is trademark of Blu-ray Disc Association.

*Black version is also available.

DENON
SOURCE SELECT
MASTER VOLUME
HDP
DTS-HD MSTR
QUICK SELECT
AV SURROUND PRE AMPLIFIER AVP-A1HD

AVP-A1HDA

Reference Next Generation HD Control Centre featuring Advanced Connectivity,
Wi-Fi Network Audio Streaming and Finest Construction and Craftsmanship to bring you the Ultimate A/V Experience.

State-of-the-art Denon Solutions for Maximising Content Quality

All new circuit layouts that shorten audio and video signal paths for best picture and sound

The “simple and straight” design concept has been thoroughly implemented in the signal paths to contribute to immaculately clean audio and video playback. Signal paths are as short as possible to keep signal degradation in the audio and video circuitry to an absolute minimum.

Fully separated Audio, Video, Pre-Amplifiers and Power Supplies allow for a cleaner and clearer signal path

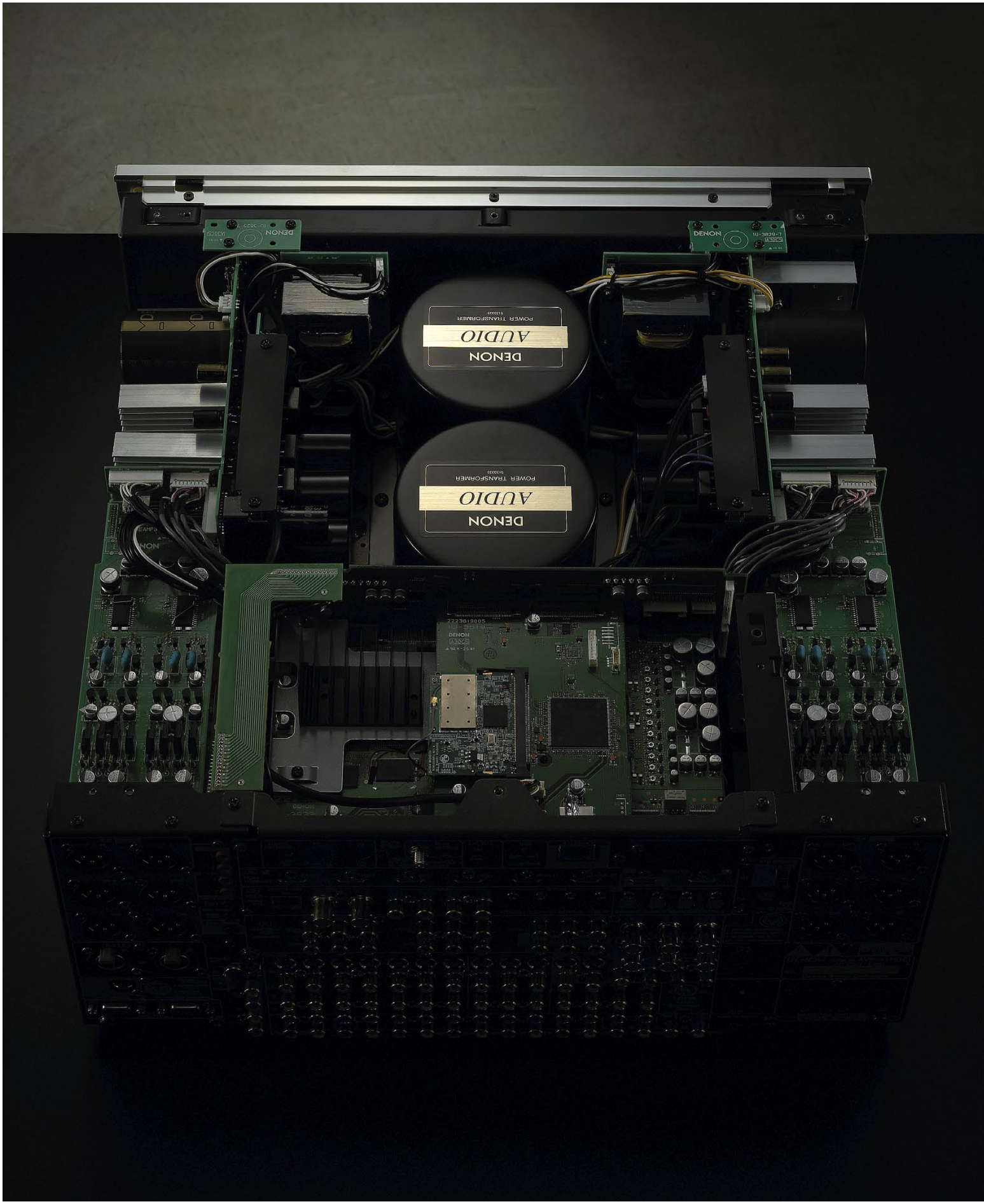
Dedicated transformers have been allotted for each block to prevent unwanted noise and produce a clean power supply circuit. One large toroidal transformer is used for the XLR output circuit and a second large toroidal transformer powers the analog audio circuit. Two transformers are used for the analog video circuitry; dedicated power supplies are provided for the display, CPU, digital audio circuitry, and digital video circuitry; and two are for the pre-amp section. The combination of these transformers, 50-ampere bridged diodes, four 10,000 microfarad block capacitors, and an ultra-robust power supply provides a stable source of power.

Pre-amp, amplifier, and volume control in discrete configuration as a single component

The AVP houses a low-impedance drive pre-amp, amplifier, and volume control unit in a discrete configuration as a single component. Since circuits configured of op-amps or similar devices used in general amplifiers do not have drive capability to withstand low impedance, distortion occurs under large current. This discretely configured pre-amp is capable of delivering distortion-free output thanks to its class-A operation capability up to low impedance. This circuit also requires a small number of elements, allowing output of pure audio signals of high S/N ratios and low distortion.

Direct Mechanical Ground

Vibration-resistant construction has been reviewed to thoroughly suppress the adverse influences of vibration on sound quality. The power transformers, a source of vibration, have been securely mounted on the highly rigid bottom chassis. Direct-mounting of cast-iron feet to the radiator in near proximity to each other serves to suppress mutual vibration with the power transformers and other sources of vibration. And careful mounting and placement of various parts has effectively eliminated the influences of external and internal vibration. This is all part of Denon’s uncompromising design for impeccable sound quality.


DENON
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POWER TRANSFORMER
AUDIO
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POWER TRANSFORMER
AUDIO
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Discrete Devices for ultimate performance in each circuit block (D.D.S.C.-HD)

The great appeal of a home theatre is to be surrounded by dynamic, realistic sound and stunningly beautiful video images. In this age of high-quality 1080p video and high-definition audio, the core of Denon A/V surround sound technology has been the Dynamic Discrete Surround Circuit (D.D.S.C.). Now, Denon has developed the D.D.S.C.-HD circuit so that high-quality HD audio performance is on par with the high quality of video images. This new circuit masterfully embodies Denon's foremost design concept for A/V surround amps which is to "reproduce content with total fidelity to the original intent of the producer." The D.D.S.C.-HD reproduces with ideal quality the sound of the latest high-grade HD audio sources.

Discrete Devices for ultimate performance in each circuit block

Dolby TrueHD and DTS-HD Master Audio decoders

Three All 32-bit floating point DSPs

Audio DACs in dual differential mode (1 per audio channel) on all output channels

Master clock design for more accurate processing and less jitter noise

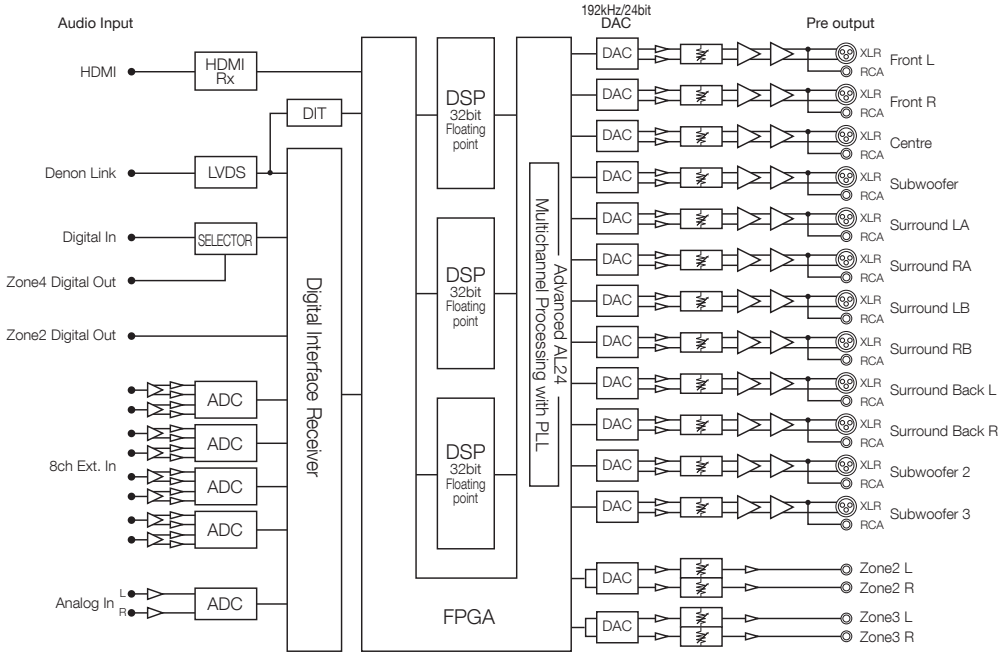
Audio ADCs in differential mode (2 per audio channel) on all analog input channels

DSP processing of EXT IN analog audio input is possible. Denon surround modes can also be enjoyed with external input audio signals.

Advanced AL24 processing provides more dynamic range

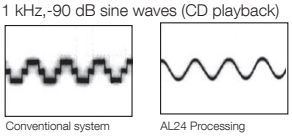
In AL24 Processing, the internal processing circuit generates 8 lower bits of data which are added to the original 16 higher bits for 24-bit quality output. The circuit then interpolates the digital data so that it as closely as possible reproduces the smoothness of an analog waveform and allows recordings on CD or other digital media to sound the way they should in the natural world. Figure 1 shows the playback sine wave of conventional 16-bit data and how an audio signal that is only output in steps of one LSB is smoothed as if it were 24-bit data. Of course, these differences are also clearly audible: distortion that causes discomfort is reduced and the sound enjoys a superior S/N, free of noise. In addition, Advanced AL24 Processing uses proprietary high-speed signal detection technology and high-speed processing technology to perform high-sampling up conversion on the time axis and produce a sine wave that is even closer to that of an analog signal. Besides expanding the conventional number of bits, Advanced AL24 Processing uses high-speed arithmetic processing algorithms developed by Denon to observe and analyse sample groups of the original data and make interpolations associated with up sampling and frequency range expansion.

Figure 2 shows the features of arithmetic processing. If we observe the sine wave of a relatively large attack signal assuming an actual music signal, we can easily see how different it is from conventional processing. While considerable ringing occurs with general FIR filters both before and after the attack signal, there is little ringing with Advanced AL24 Processing and we can see how well suited this technology is for the reproducibility of sine waves. Since greater efficiency in processing and higher processing capacity allow data samples to be processed in one stage across a wide range, signals can also be interpolated with greater accuracy compared to methods such as multi-stage configurations that use conventional digital filters. In addition, the over sampling rate has been boosted to 16fs from 8fs to facilitate the expansion of data volume that contains a more detailed, natural sound. The sonic result for the audiophile is the ability to enjoy musical recordings with the full ambience of the concert hall replete with its spaciousness and the movements of musicians.



AVP-A1HDA AUDIO BLOCK DIAGRAM

Figure 1
1 kHz,-90 dB sine waves (CD playback)



Compared by impulse response(24-bit,96kHz)

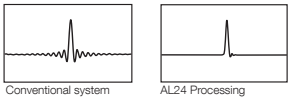
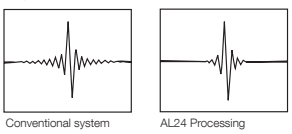


Figure 2
Playback sine waves with attack sounds



Master clock design

Various techniques have been adopted to boost the precision of the master clock and ensure meticulous accuracy in D/A conversion. These include stabilizing the power supply and ground potential, and minimizing the length of wires. In addition, by regenerating the master clock with a high-accuracy phase-locked loop (PLL) near the D/A converter, residual jitter is minimized, enabling playback of high-quality sound with clear sound images and contours.

Denon Link 3rd

Denon LINK is a jitterless digital interface that uses high-speed transmission devices for balanced transmission to achieve high-speed, high-grade real-time digital transmission with negligible signal degradation. When connected to a DVD player, Denon LINK enables direct digital input of PCM 24-bit/192-kHz digital signals and other high-speed, high-sound-quality multi-channel signals from such sources as DVD-Audio and Super Audio CD.

To preserve original sound quality for the room's acoustics at any volume level, Audyssey Dynamic EQ loudness correction technology

Dynamic EQ corrects frequency responses at any volume level while considering such aspects as the measured characteristics of the room, volume of the source, and the characteristics of human ears. Even when the volume is turned down, it is possible not to sense weakness in sound or insufficient dynamism.

Refined calibration technology to improve an acoustical condition of any room.

New tower type microphone is used to measure the characteristics of the speakers and the listening room. The data is analysed by a high-performance DSP, and the Auto Set-up function automatically makes initial settings for the speakers. The newly improved MultEQ XT technology then processes acoustic data obtained from up to 8 listening positions, and the Room EQ (Equalizer) function corrects the frequency response to achieve the optimum listening environment for the room.
-New filtering ALFC (Adaptive Low Frequency Correction) for higher resolution processing in the low frequency band

The following 6 basic settings are automatically made for the speakers:

1. Speaker connection 2. Speaker size 3. Speaker level
4. Speaker distance 5. Speaker phase 6. Cross-over frequency

Room EQ

By measuring multiple listening positions, up to a maximum of 8, frequency response for the overall listening area is automatically corrected. During Auto Set-up, minute corrections are made in each speaker by an FIR filter which in theory has no phase variation. There are three correction patterns: Audyssey, Audyssey Byp. L/R, and Audyssey Flat. Manual setting is also possible using a 9-band graphic equalizer. During manual setting, it is possible to make settings while listening to your favourite music. Since 4 correction patterns including manual setting can be assigned to each surround mode, corrections for the overall listening area can easily be set for each source.

Audyssey: Corrects the frequency responses of all speakers to optimum levels.

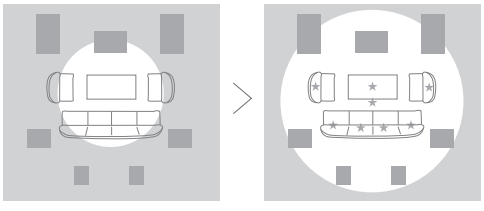
Audyssey Byp. L/R:

Corrects the frequency responses of all speakers except the front L/R speakers.

Audyssey Flat: Corrects frequency responses so that they are all uniform.

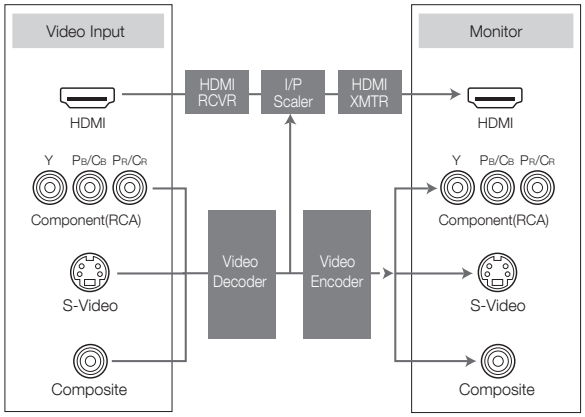
Manual: Manually adjusted frequency responses are applied.

Off: Room EQ is not used.



Denon's High Picture Quality Circuitry, to enhance enjoyment of existing DVDs

This circuitry employs an I/P (Interlaced/Progressive) converter - also vital for audio circuitry - and a Realta sxT2 scaler that converts the SD video images of DVD to high-definition 1080p images. High conversion performance is made possible by 10-bit processing, and motion detection is dramatically improved as well. Regularity at the pixel level not only for the 3:2 pattern of film sources but also for other patterns is accurately detected at high speed for highly precise I/P conversion. Even when a source contains both Video mode and Film mode material, each mode is accurately detected and processed at high speed, enabling high-quality Progressive playback of a variety of DVD discs. The Realta sxT2 also functions as a high-performance scaler that makes 1080p HDMI output possible. 10-bit processing enables high-precision scaling, and the most appropriate conversion for the output resolution is performed even when video signals recorded on a DVD using colour difference signals are output in RGB format. As a component dedicated to playback, the sole job of the AVP-A1HDA is to ensure that A/V enthusiasts can enjoy a rich variety of DVDs in superior picture quality.



*Down-conversion from component video to composite or S-video occurs only with 480i and 576i signals.

Digital Noise Reduction, to optimise effects for both SD and HD content

This DNR technology optimises the effects of high-definition Blu-ray video as well as standard DVD discs.

Denon Pixel Image Correction, for more natural correction of curved lines

The AVP-A1HDA is endowed with Denon Pixel Image Correction enhancer technology to perform high-definition video image correction. 10-bit processing is used to detect and correct curved lines with greater precision. The new enhancement processing algorithm considers the effects of peripheral pixels in addition to the target pixels, sampling and analysing video data of a total of 9 pixels. Pixels in horizontal, vertical, and diagonal directions are detected and processed in detail. Brightness and Colour signals are also processed by the same algorithm which then suppresses ringing noise that easily occurs during enhancement and performs other processes to effectively produce a vivid, natural picture.

Detailed picture quality adjustability

Besides the Denon Pixel Image Correction functions, picture quality can be adjusted over a wide range of elements including not only Contrast and Sharpness but also White level, Chroma level, Noise Reduction settings, and Gamma.

HDMI (ver. 1.3a supporting Deep Colour (30/36-bit), "x.v.Color", High-Bit-Rate Audio input)

The HDMI input/output ports permit digital transmission of video and audio signals over a single HDMI cable. Since the latest version of this interface is provided, the AVP-A1HDA supports a variety of specifications, such as Deep Colour (30/36-bit), "x.v.Color", Lip Sync, High-Bit-Rate Audio, and HDMI Control.

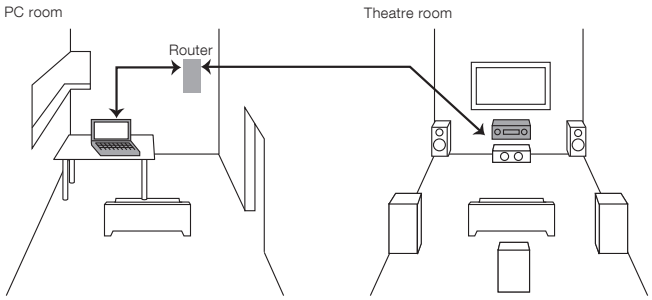
Connectivity & Future-ready Expandability

Network Audio and Photo Streaming

The AVP-A1HDA includes a wireless LAN function. A music server such as Windows Media Player ver.11 can be used via a LAN connection to play music files stored on a PC. Supported audio file formats are MP3, WAV (linear PCM), AAC (DRM not supported), WMA, and FLAC.
(The AVP-A1HDA's music server function complies with Digital Living Network Alliance [DLNA] specifications.)

Internet Radio

You can access a list of over 7,000 radio stations via “vTuner” service, and enjoy your favourite music channels without a PC.

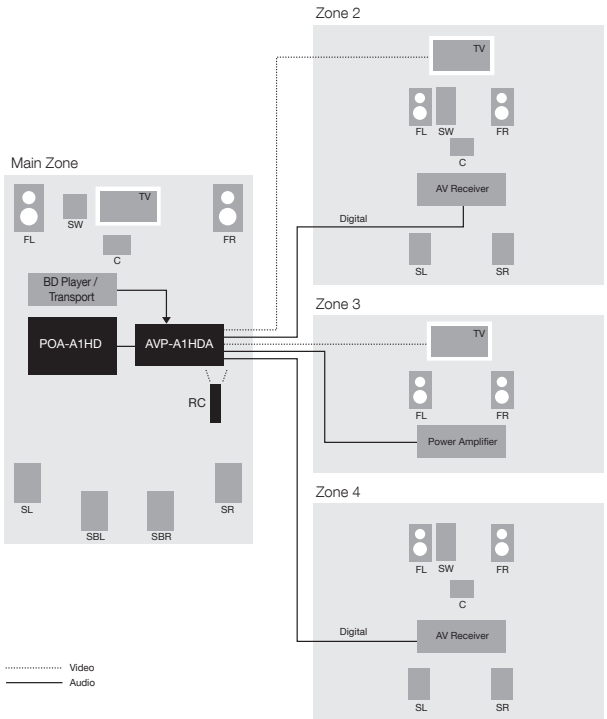


Compressed Audio Restorer to enhance digital music files

Compressed Audio Restorer is Denon original audio technology that interpolates audio information that has been lost during suppression of audio files downloaded from the Internet or for digital audio players, and plays the powerful low range and the delicate details in the high range of these files without sacrificing the overall balance of sound.

Multi-Zone Capabilities

- Three analog and one digital, four zone multi-source capability
- Zone 2 OSD with text, Album art is also available



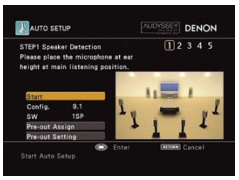
Ease-of-Use

Audyssey Dynamic Volume, for real-time volume adjustment

Audyssey Dynamic Volume constantly monitors the sound sources and adjusts the volume to the optimum level for the particular source being heard without sacrificing dynamic range.

New user interface for easy operation, setup and digital media browsing

The newly-developed graphical user interface (GUI) supports displays in multiple languages to vastly improve operating ease and use.



GUI-assisted operation even during 1080p output from HDMI

Dual HDMI outputs enabling simultaneous output to video projector and flat panel

There are 2 HDMI outputs that can be used simultaneously. It is possible, for instance, to connect one to a video projector and the other to a flat panel display.

2-line fluorescent display on front panel

Current status, such as the input source or audio format, is displayed in two lines. It is also possible to check the name of the album or music track of the memory audio or other items without viewing the TV screen. The 2-line display also makes it possible to easily change settings without the GUI and TV screen.

Web setup, save and load all settings via Ethernet

Browser software on a PC can be used via network connection to set up or control the AVP-A1HDA.

Remote control unit with GLOW-KEY buttons for easy operation in the dark

Sub-Remote controller

The AVP-A1HDA comes with a sub-remote controller in addition to the main remote controller. Since the sub-remote controller has buttons that operate frequently-used functions, this controller can be used for simple operations. The sub-remote controller can also be used in multi-zone setups, to operate the AVP-A1HDA from another room.

Sub-remote controller functions:
- Input source switching
- Volume adjustment
- iPod operation
- Direct play of NET/USB
- Operation of GUI menus and Zone 2 on-screen displays
- Power ON/OFF for individual zone.

DENON MODEL NO AVP-A1HD
POWER SOURCE 230V ~ 50Hz
POWER CONSUMPTION W
ALIMENTATION 230V ~ 50Hz
CONSOMMATION W
Denon Brand Company
WARNING : SHOCK HAZARD - DO NOT OPEN. AVIS : RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR.
MADE IN JAPAN

Other Features

THX Ultra2 certified

Pure Direct mode, for enjoying high-quality pure audio

Pure Direct mode allows listeners to enjoy the pure, impeccable high sound quality of music. When Pure Direct mode is activated, the fluorescent display is turned off and unused circuitry automatically shuts down. It is also possible to turn off power to the video and digital circuits to further improve sound quality.

Auto Surround Mode, to automatically remember surround modes for 4 input signal formats

Surround modes or surround parameters can be automatically stored for each of 4 types of input signals: 2-channel analog/PCM, 2-channel digital, 5.1-channel digital, and multi-channel. If the type of input signal is changed, the optimum surround mode is thus automatically set for that signal.

Supports connection of up to 3 subwoofers

When as many as 3 subwoofers are connected, it is possible to select MIX or L/R channels. THX-compliant modes can also be selected.

Night mode for low-volume listening, and Dolby Headphone for enjoying surround sound with headphones

1080/24p pass through (via HDMI)

Analog video to HDMI scaling up to 1080p

12-bit/216-MHz video encoder and decoder with NSV

iPod audio, photo and video playback (optional ASD-1R/3N/3W)

A separately-sold Denon control dock for the iPod can be connected to listen to music or view video stored on the iPod.

Mass storage support USB for audio and photo playback (MTP compatible)

Album art support (iPod/Network/USB)

Title text (iPod/Network/USB)

Multi language support (EN, DE, FR, IT, ES, NE, SV, JP)

Dual component outputs for main zone

BNC connectors for component input/output

Supports HDMI Control (Consumer Electronics Control)

When connected via HDMI cable to a TV or player that supports HDMI Control, it is possible to use the TV's remote control unit to perform such operations as turn power on or off, switch functions, or adjust the volume.
(Note: This may not work with some devices or settings.)

IR Remote in/out ports

+12V, 250mA trigger x 4 outputs

RS-232C control x 2

Optional RC-7000CI/7001RCI 2-way control ready

When combined with the separately-sold RC-7000CI RF remote controller or RC-7001RCI remote receiver, bi-directional communication is possible between the AVP-A1HDA and the RC-7000CI. It is also possible to select files for playback from a list displayed on the remote controller's screen.

Input / Output terminals

IN	HDMI		6
	Component		6 (1: BNC)
	S-Video		8
	Composite		8
	XLR		1
	Analog audio		10
	EXT. In		7.1ch
	Digital OPT		5
	Digital COAX		6 (2: BNC)
	Denon Link 3rd		1
OUT	HDMI monitor		2
	Component	main monitor	2 (1: BNC)
		Zone 2 monitor	1
	S-Video	REC	3
		Monitor / Zone 2	1 / 1
	Composite	REC	3
		Monitor / Zone 2	1 / 1
		Zone 3	1
	Analog preout		9.3 ch XLR (Balanced)
	Analog preout		9.3 ch RCA (unbalanced)
	Analog audio	REC	3
		Zone 2 / Zone 3	1 / 1
	Digital optical	REC	2
		Zone 2	1
		REC / Zone 4	1
Others			
	Trigger +12 V, 250 mA		4
	RS-232C		2
	Control link		1
	Remote IN/OUT		IN 1 / OUT 1
	Ethernet		1
	Wi-Fi (WLAN Antenna)		1
	USB		2
	Dock control		1
	Setup mic		1

Specifications

Pre-amplifier Section		
Input sensitivity/impedance		
	PHONO(MM)	2.5 mV
	Audio inputs	RCA (unbalanced) 200 mV/47 kohms
		XLR (balanced) 400 mV/100 kohms
Output level/Load impedance		
	Audio outputs	RCA (unbalanced) 1.2 V
		XLR (balanced) 2.4 V
General		
Input sensitivity/impedance		
	Power supply	AC 230 V, 50 Hz
	Power consumption	150 W
		(Standby: 0.3 W)
	Dimensions W x H x D	434 x 214 x 485 mm
	Weight	27.5 kg

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*DTS is a registered trademark & the DTS logos and symbol are trademarks of DTS, Inc.
*HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.
*"x.v.Color" is trademark of Sony Corporation.
*HDCD®,High Definition Compatible Digital® and Microsoft® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
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*The Realta HQV is a registered trademark of Silicon Optix Inc.
*iPod is a trademark of Apple Inc., registered in the U.S. and other countries.

DENON
DENON
-60 -50 -40 -30 -20 -10 0 +4 +6
dB
POWER OUTPUT
DENON
-60 -50 -40 -30 -20 -10 0 +4 +6
dB
POWER OUTPUT
DENON
-60 -50 -40 -30 -20 -10 0 +4 +6
dB
POWER OUTPUT
METER
METER
METER
METER ON / OFF
THX
POWER AMPLIFIER POA-A1HD

POA-A1HD

Reference 150 Watts x 10 channel Fully Configurable Power Amplifier

State-of-the-art Denon Solutions for Maximising Content Quality

4 Ohms Guaranteed Mono Block Construction Amplifiers

The POA-A1HD is a 10-channel high-output power amplifier with 300 watts (4 ohm) of uniform-quality current for each channel. To ensure maximum performance as an audio amplifier, this model has been designed with a discrete monaural configuration where each channel is endowed with its own parts and radiator. Interference between channels has been eliminated to produce highly pure sound with a realistic sound space.

150 W x 10 channels (8 ohms), 300 W (4 ohms)

300 W Bridgeable derive (8 ohms), 500 W (4 ohms)

10-channel power amp capable of driving low-impedance speakers

THX Ultra2 certified Power Amplifier

Fully separated construction for each 10 channels for all same audio quality

Mono block concept to amplify with best performance

Separate winding in power circuit for each channel

New amplifier circuit that shortens audio signal paths for the best audio

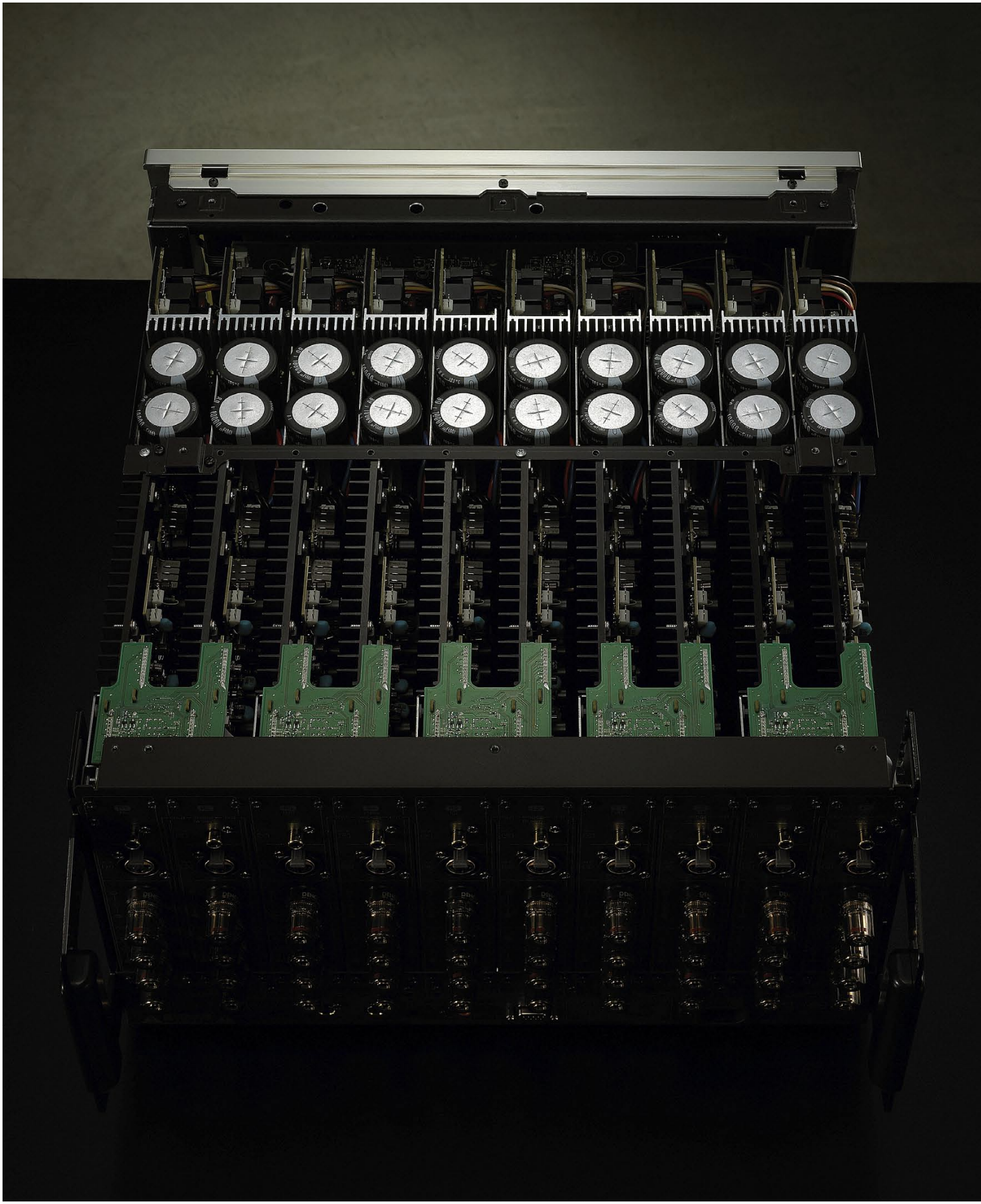
Direct Mechanical Ground to minimize mechanical vibration from transformer and radiators

8 individual transformers to supply power to each discrete circuit

4 main power transformers to drive 10 ch power amplifiers with separated coil winding for pure audio playback

The main power unit for the power amp is configured of four large transformers dedicated to the power amp section, large-capacity block capacitors, and large-capacity rectifying diodes, to provide a stable supply of current from the main power supply block. This highly reliable current allows listeners to freely enjoy high-quality sound even during dynamic playback of surround sound or multi-channel sources. The power unit also has two independent pairs of large transformers, one for each stereo channel, and each channel is independently configured from a secondary coil on each transformer to suppress interference between circuits and ensure superior sound quality.

High current diodes and capacitors to drive bridged speakers Multi-Zone Capabilities

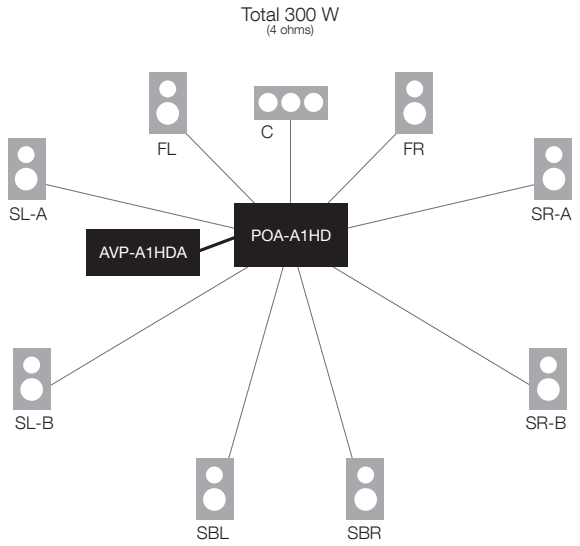


All channels of power amp can be assigned to various locations

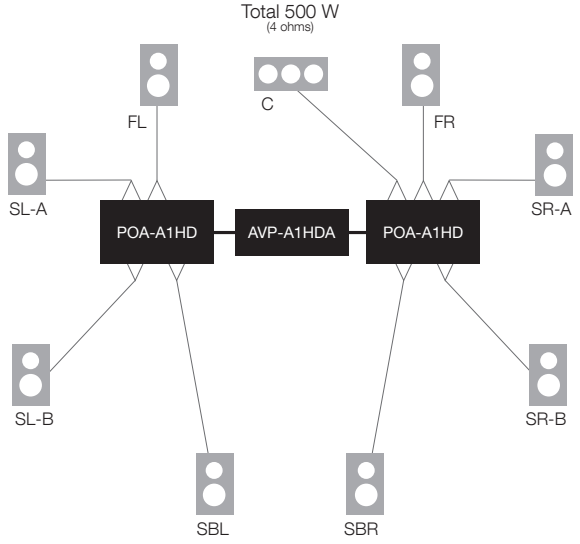
The AVP-A1HDA with 10 pre-amp channels is equipped with a power amp assignment function capable of taking efficient advantage of the POA-A1HD's power amp to support a variety of situations in the listening environment. Since the 10 speaker terminals can be freely assigned to any channel, the combination of one AVP-A1HDA and a POA-A1HD permits the enjoyment of home theatre entertainment in a variety of environments.

The front channels can also be used as a bi-amp, or as a bridged connection for higher power output through a single channel. You could also purchase two POA-A1HD power amps to bridge-connect 10 output channels that would let you enjoy incredible dynamism on the level of a movie theatre.

Case 1 9ch Speaker Setting by Normal Connection



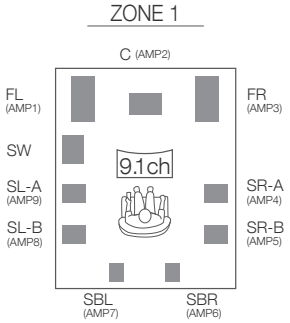
Case 2 9ch Speaker Setting by Bridgeable Connection



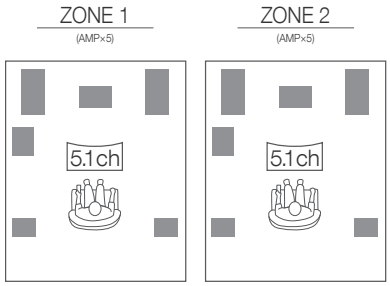
One example is given below:

1. Serious dynamism of a 9.1(+0.2)-channel surround system for one room.
2. 5.1-channel second zone theatre: Enjoy 5.1-channel theatre environments in two rooms.
3. Multi-zone system: Divide 10 channels of output to make a 7.1-channel theatre for the main room, a 2.1-channel environment for a second room, and a monaural environment for a small third room.
4. Bi-amp system: In a 7.1-channel theatre environment, bi-wire-connect two front speakers (L/R) and a centre speaker to give a big boost to playback quality from the front.

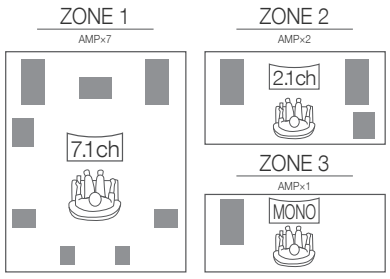
1.



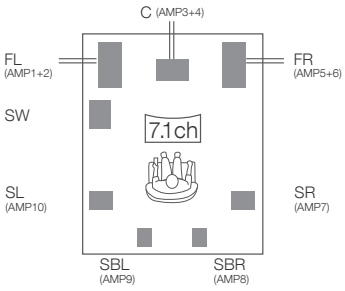
2.

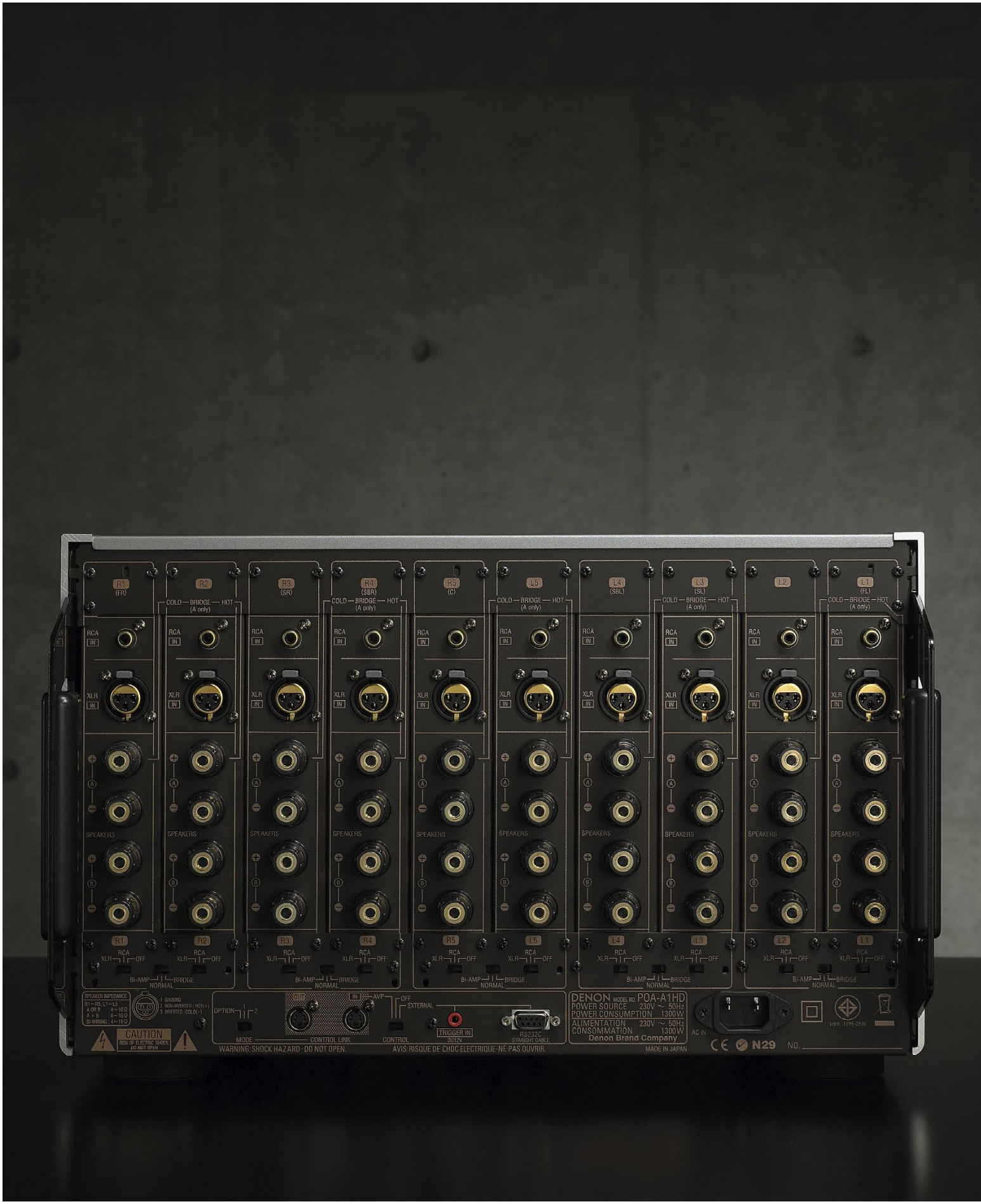


3.



4.




R1 (FR)
R2
R3 (SR)
R4 (SBR)
R5 (C)
L5
L4 (SBL)
L3 (SL)
L2
L1 (FL)
COLD — BRIDGE — HOT (A only)
RCA IN
XLR IN
SPEAKERS
BI-AMP NORMAL BRIDGE
OFF
SPEAKER IMPEDANCE
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
OPTION
MODE
CONTROL LINK
CONTROL
EXTERNAL
TRIGGER IN
RS232C STRAIGHT CABLE
DENON MODEL NO. POA-A1HD
POWER SOURCE 230V ~ 50Hz
POWER CONSUMPTION 1300W
ALIMENTATION 230V ~ 50Hz
CONSOMMATION 1300W
Denon Brand Company
AC IN
MADE IN JAPAN
N29
NO.
WARNING: SHOCK HAZARD - DO NOT OPEN.
AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR.

THX ULTRA2

Ease-of-Use

Control Link allowing POA-A1HD settings to be made via the AVP-A1HDA remote control unit (includes Control Link Cable: 3 m)

With the POA-A1HD, it is possible to switch among XLR, RCA, and OFF for the input signals and among Bi-Amp, NORMAL, and BRIDGE for the types of output, for each channel. The POA-A1HD is also equipped with Control Link to enable communication with the AVP-A1HDA. When connected with a Control Link Cable, these settings can be made using the remote control unit that comes with the AVP-A1HDA. (When the POA-A1HD is used on its own, switches on the rear panel are used to change the settings.)

VU meters available of any channel

Other Features

RCA and XLR input for each channel

Bi-Amp / Bridge mode select

Bridged or bi-amp connections are possible by setting a switch on the rear panel that will enable the connection of a 2-channel unit to a single-channel input. Settings are made individually for each channel so that the front and centre channels can be bridged and the surround and back surround channels can be used singly. During linked control from the AVP-A1HDA, the connection method can be selected from the AVP-A1HDA's remote controller.

Gold plated wide pitch speaker terminal

Trigger input

RS-232C

Input / Output terminals

IN	XLR	10
	RCA	10
OUT	Speaker A L/R out	10
	Speaker B L/R out	10
Others	Trigger +12 V, 250 mA	1
	RS-232C	1
	Control link	IN 1 / OUT 1

Specifications

Power Amplifier Section	
Rated output	150 W (8 ohms)
	300 W (4 ohms)
	300 W (8 ohms) Bridge Connection
	500 W (4 ohms) Bridge Connection

General	
Power supply	AC 230 V, 50 Hz
Power consumption	1,300 W
	(Standby: 0.3 W)
Dimensions (W x H x D)	434 x 281 x 530 mm
Weight	60 kg

*Design and specifications are subject to change without notice.
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DENON
SOURCE SELECT
MASTER VOLUME
HDP
DTS-HD MSTR
QUICK SELECT
AV SURROUND AMPLIFIER AVC-A1HD

AVC-A1HDA

Reference Next Generation AV Surround Amplifier with Advanced Connectivity,
High Definition Audio and Video Processing, Multimedia capabilities and Finest Construction and Craftsmanship
to bring you the Ultimate A/V Experience

State-of-the-art Denon Solutions for Maximising Content Quality

THX Ultra2 certified 170W x 7ch power amplifier

All new circuit layouts that shorten audio and video signal paths for best picture and sound.

Dolby TrueHD and DTS-HD Master Audio decoders.

Sophisticated Construction for the Ultimate A/V playback

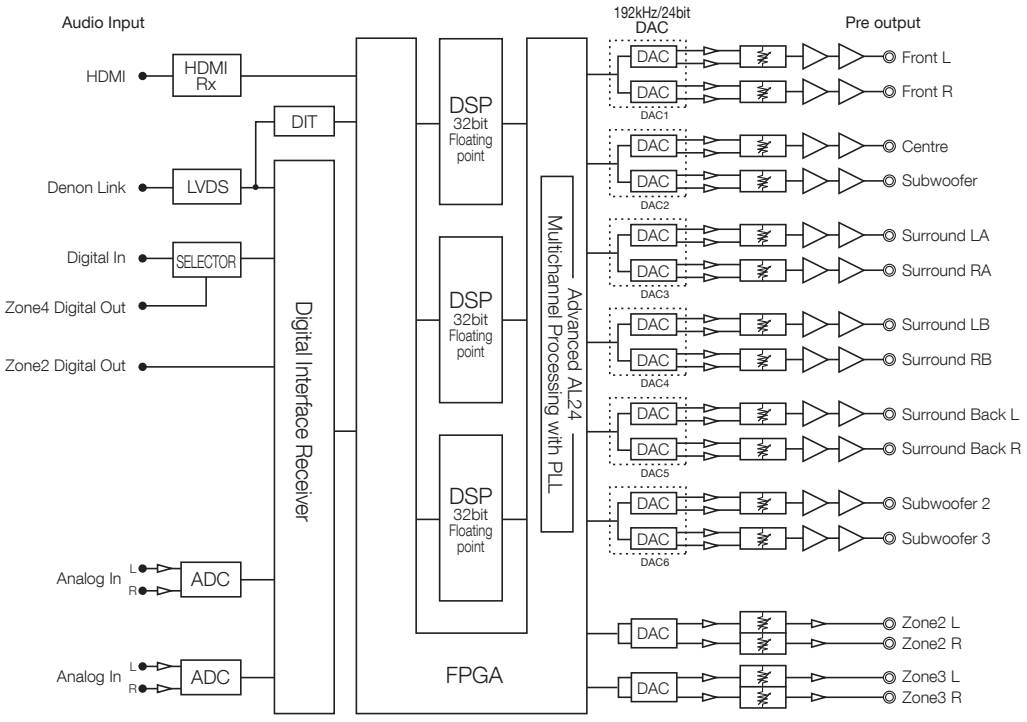
- Fully separated Audio, Video, Power Amplifiers and Power Supplies allow for a cleaner and clearer signal path
- High current Toroidal Power Supply to drive discrete mono block amplifier channels
- 6 individual transformers to supply power to each discrete circuit
- Direct Mechanical Ground to minimise mechanical vibration from transformer and radiators

Dynamic Discrete Surround Circuit, D.D.S.C.-HD

- 3 All New 32-bit floating point DSPs
- Master clock design for more accurate processing and less jitter noise
- Advanced AL24 processing provides more dynamic range
- Audio DACs in differential mode on all output channels
- Audio ADC in differential mode

Refined calibration technology to improve a acoustical condition of any room.

- Newly improved Audyssey MultEQ XT
- New tower type microphone for more accurate measuring up to eight measurement points
- Audyssey DynamicEQ loudness correction system, for optimum listening experience at any volume
- New filtering ALFC (Adaptive Low Frequency Correction) for higher resolution processing in the low frequency band



THX ULTRA2 SURROUND EX · DOLBY TRUEHD · dts-HD Master Audio · HQV · NSV · HDMI · AUDYSSEY MULTEQ XT DYNAMIC EQ · AUDYSSEY DYNAMIC VOLUME · HDCD · WiFi b/g CERTIFIED · CERTIFIED FOR Windows Vista · dlna CERTIFIED

ADVANCED AL 24 PROCESSING MULTI CHANNEL · D·D·S·C HD DIGITAL · DENON LINK · Network · Personal Memory Plus · autosetup roomEQ · 7ch EQUAL POWER · 8ch EXT.INPUT · Multi Room Music Entertainment System · CINEMA EQ · 2way RC compatible

Other Features

Full 10-bit processing video circuit

- Multi Cadence Detection for accurate i/p conversion
- 1080/24p pass through
- HQV Scaling from analog and HDMI sources up to 1080p
- 12-bit/216-MHz video encoder and decoder with NSV

Realta T2-400 HQV processing for 10 bits i/p conversion and scaling.

Deep Color (30/36-bit) and xvYCC broader color space support.

HD/SD video noise reduction functionality.

Connectivity & Future-ready Expandability Digital Media Connectivity

- Network Audio and Photo Streaming
- Playback and control music files from PC and DLNA Servers
- AAC, WMA , MP3, FLAC, WAV file support
- Connect to over 7,000 internet radio stations
- JPEG Photo slideshow
- Connect to your network via Ethernet or Wi-Fi (802.11 b/g compatible)
- Web system control via any PC on the network
- iPod audio, photo and video playback (optional ASD-1R/3N/3W)
- Mass storage support USB for audio and photo playback

Compressed Audio Restorer to enhance digital music files.

New user interface for easy operation, setup and digital media browsing (G.U.I.).

Ease-of-Use

- Audyssey Dynamic Volume, for real-time volume adjustment

Audyssey Dynamic Volume constantly monitors the sound sources and adjusts the volume to the optimum level for the particular source being heard without sacrificing dynamic range.

- Album art support (Network/USB)
- Title text (iPod/Network/USB)
- Multi language support (GB, D, F, I, E, NL, S, JP)

GUI-assisted operation even during 1080p output from HDMI.

Dual HDMI outputs enabling simultaneous output to video projector and flat panel.

Multi-Zone Capabilitie

- Digital to analog conversion for multi-zone output
- Analog to digital conversion for multi-zone digital output (only Zone2)
- Independent zone 2 component output
- Dual component outputs for main zone
- BNC connectors for component input/output
- IR Remote in/out ports
- +12V, 250mA trigger x 4 outputs
- RS-232C control x2
- Optional RC-7000CI/7001RCI 2-way control ready

Zone 2 OSD with text, Album art is also available.

Web setup, save and load all settings via Ethernet.

Support for HDMI Control (CEC).

Input / Output terminals

IN	HDMI		6
	Component		6 (1: BNC)
	S-Video		8
	Composite		8
	Analog audio		11
	EXT. In		7.1ch
	Digital OPT		5
	Digital COAX		6 (2: BNC)
	Denon Link 3rd		1
OUT	HDMI monitor		2
	Component	main monitor	2 (1: BNC)
		Zone 2 monitor	1
	S-Video	REC	3
		Monitor / Zone 2	1 / 1
	Composite	REC	3
		Monitor / Zone 2	1 / 1
		Zone 3	1
	Analog audio	REC	3
		Zone 2 / Zone 3	1 / 1
	Digital optical	REC	2
		Zone 2	1
		REC / Zone 4	1
Others	Trigger +12 V, 250 mA		4
	RS-232C		2
	Tuner antenna AM/FM		1 / 1
	Remote IN/OUT		IN 1 / OUT 1
	Ethernet		1
	Wi-Fi (WLAN Antenna)		1
	USB		2
	Dock control		1
	Setup mic		1

Specifications

Power Amplifier Section

Rated output		
	Front	150 W + 150 W (8 ohms, 20 Hz - 20 kHz)
		170 W + 170 W (6 ohms, 1 kHz with 0.7 % T.H.D.)
	Centre	150 W (8 ohms, 20 Hz - 20 kHz)
		170 W (6 ohms, 1 kHz with 0.7 % T.H.D.)
	Surround	150 W + 150 W (8 ohms, 20 Hz - 20 kHz)
		170 W + 170 W (6 ohms, 1 kHz with 0.7 % T.H.D.)
	Surround back	150 W + 150 W (8 ohms, 20 Hz - 20 kHz)
		170 W + 170 W (6 ohms, 1 kHz with 0.7 % T.H.D.)

Pre-amplifier Section

Input sensitivity/impedance		
	PHONO(MM)	2.5 mV
	Audio inputs	200 mV/47 kohms
Output level/Load impedance		
	Audio outputs	1.2 V

General

	Power supply	AC 230 V, 50 Hz	
	Power consumption	630 W	(Standby: 0.3 W)
	Dimensions W x H x D	434 x 217 x 500 mm	
	Weight	29 kg	

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